Every Man his own Gauger:

WHEREIN

Not only the Artist is shown a more Ready and Exact Method of *GAUGING* than any hitherto Extant. But the most Ignorant, who can but read *English*, and tell Seven in Figures, is Taught to find the Content of any sort of Cask or Vessel, either full, or in part full; and to know if they be right siz'd.

ALSO

What a Pipe, Hogshead, *&c.* amounts to at the common Rate and Measure they Buy or Sell at. With several useful Tables to know the Content of any Vessel by. Likewise a Table shewing the Price of any Commodity, from one Pound to an Hundred weight, and the contrary.

To which is added,

The true Art of Brewing Beer, Ale, Mum; of Fining, Preserving and Botling Brew'd Liquors, of making the most common Physical Ales now in use, of making several Fine *English Wines*.

The Vintners Art of Fining, Curing Preserving and Rectifying all sorts of Wines, of making Artificial Wines, Distilling of Brandy and Spirits from Malt, Malasses, *&c.*

TOGETHER

With the Compleat Coffee-Man, Teaching how to make Coffee, Tea, Chocolate, Content, and the Richest, Finest Cordials. *&c.*

Of great use for common Brewers, Victuallers, Vintners, Wine-Coopers, Distillers, Strongwatermen, Coffeemen and all other Traders.

By *JAMES LIGHTBODY*, Philomath.

London, Printed for *Hugh Newman*, at the *Grashopper* next the *Rose Tavern* in the *Poultrey*, 1695.

Bill Given
1948

TO THE

Right Honourable

Sir *THOMAS LANE*, Kt.

Lord Mayor

OF THE

City of LONDON.

My Lord,

WHen I first resolv'd to put this small, but useful piece in Print, I was ea-

ſily perſwaded by my friends to addreſs it to your *Lordſhip*, not out of a deſign to beg your ſhelter and *protection* of it from the ill uſages of a cenſorious world, tho I know that your Authority will keep 'em in breath, long after the Author ſhall have expired his; but my aim is to a more important end, (the main deſign of the whole Work being to diſcover Frauds between Buyer and Seller) the World being ſenſible how careful you have been to Curb Fraudulent Dealings, and promote Juſtice, there could be none ſo proper

as

as your Lordſhip to Dedicate a thing of this Nature to: And yet in attempting this, I may ſeem impertinent, becauſe you are become your own Theatre, every Scene of your Life is ſo generally known, whilſt the World is a Spectator to Applaud and Admire you; that it were even unpardonable, in one of my Station, either to think to add any thing to your Lordſhips Luſtre, or to believe I need open my Readers Eyes. Your Lordſhips Favour in Patronizing this ſmall Tract, ſhall be reckoned at-

ſt

eſt Honour I can receive, and ſhall humbly beg your Lordſhips Pardon and Permiſſion to ſubſcribe my ſelf,

Your Lordſhips

Moſt Humbly Devoted

And faithful Servant,

James Lightbody.

THE

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TO

EVERY MAN
His Own
GAUGER.

INTRODUCTION.

THIS being a buſineſs which concerns every Man who Sells, and Buys ſuch Liquors as are liable to pay y to the King, as well as otherwiſe, ll endeavour to make it as plain as ſibly the Nature of the thing will w.

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TO

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His Own
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INTRODUCTION.

THIS being a buſineſs which concerns every Man who Sells, and Buys ſuch Liquors as are liable to pay Duty to the King, as well as otherwiſe, I ſhall endeavour to make it as plain as poſſibly the Nature of the thing will allow.

It is common for every Man who buys any Liquors, to examine the Quality of it, but is obliged to take the Sellers word for the Quantity, by reaſon he is not ſo competent a

Judg therein, as he may be of the o-
ther: But without doubt every man i
desirous to know how much, as well
as what he has bought; and question-
less, sometimes a Man Pays for more
than he has delivered to him, tho a
the same time he Pays for no more than
what he has Bought, and ought to have
delivered to him.

To prevent such Inconveniencies o
Losses, it is proper the buyer as wel
as the seller, should understand how t
Measure or *Gauge* such Quantities a
they buy, in the Cask; and becaus
every Man is not so well vers'd i
Arithmetick as the Art of Gauging re
quires, I shall set down such easy Rule
as may sute the meanest Capacity, an
I shall begin with a Common Brewer

CHA

CHAP. I.

How a Common Brewer may Gauge his own Worts in the Cooler, or Back, ſo that he may know his Charge.

Firſt, YOU are to find the Area, or what quantity your Cooler, or Back holds upon one Inch in depth, which muſt be found in manner following.

Suppoſe a Square Cooler be in length 206 Inches, and 3 tenth Parts of an Inch, and in breadth 153 Inches, and

2 tenth parts of an Inch, you mu
Multiply 206.3 the length of th
Cooler by 153.2 the Breadth, and th
Product divide by 282, or Multipl
by .00355. And the Quotient, if yo
Divide, or the Product, if you Mul
tiply, is how many Gallons of Worts
your Back holds upon every Inch i
Depth. Now having found the Are
of your Cooler, or the Content upo
one Inch in Depth, the greateſt par
of the work is done, the remainin
part being only to Multiply that Are
by the Inches and Parts, the Back is i
depth of Liquor, and the Product is th
Number of Gallons and Parts the Cool
er has in it.

Note, *That the Area being once found, yo
are to inſert it in a Book, and will have o
caſion to find it no more ſo long as that Cool
laſts or continues in the ſame form; but
uſe it as a conſtant Multiplier for its pr
per Cooler.*

Examp

Example.

The Coolers Length is	206.3
Breadth is	153.2
The Product of these two is	31605.16
The Proper Multiplyer is	.00355
The Area	112.1983180

You are always to prick off ſo many figures to the right hand of the Product, as there is Figures Prickt off in both Multiplicator, and Multiplicand, as you may ſee in the foregoing work; the Product of the length and breadth was 2, and the proper Multiplier is in Number 5 which is all Decimal parts, which makes ſeven in all, therefore I have prickt off 7 Figures to the right hand, which is only the Fraction, or part of a Gallon, and the three Figures beyond the prick to the left hand is ſo many Gallons; ſo that the Area of the foregoing Back is 112 Gallons and 19 hundreth parts of a Gallon; or the firſt two figures beyond the

Prick, to the right, are moſt ſignificant, as you may find Explain'd at large in my *Gauger and Meaſurers Companion.*

Note, *That .75 is 3 quarters of a Gallon, .50 the half of a Gallon, and .25 the one quarter of a Gallon, ſo that .19 in the foregoing Example is ſomething leſs than the quarter of a Gallon, and more than the eighth part of a Gallon.*

So much ſhall ſuffice for the Gauging of Square Backs, and ſhall proceed to Round and Oval Coolers, there being ſcarce any other form uſed, the Triangle being altogeter needleſs.

Of Gauging Round Coolers.

If it be a Cooler that is wider at the top than bottom, or at the bottom than top, you are, when it is empty, to take a Line and extend from the one ſide of the top to the other, ſo that it may croſs the Center or Middle of the Circle, and apply it, ſo Extended, to your Rule, ſetting down how many Inches and tenth parts of an Inch it cuts on the

the Rule, and ſo likewiſe extend your line to the bottom, ſetting it down in like manner; when ſo done, you are to add both theſe Dimenſions together, and take one half of the Sum for the Diameter of the Cooler.

Example.

Suppoſe a round Cooler was 64.2 *at top, and* 56.3 *at bottom, the Sum is* 120.5 *the half whereof is* 60.2, *which is the Mean Diameter of the round Cooler.*

Now to find the Area of this round Cooler, you are to Multiply the Diameter of it by it ſelf (*i e.*) 60.2 by 60.2, and the Product thereof Divide by 359 or Multiply by .00278. and the Quotient or Product is the Area in Ale-Gallons, the which you are to inſert in your Book as aforeſaid.

Suppoſe a round Coolers Dimenſions to be according to the foregoing Paragraph, that is, the Mean Diameter to be 60.2,

The Product of the Diameter is	3624.04
The Proper Multiplyer is	.00278
The Area is	10.07

The which you are to Multiply by the Number of Inches and Parts, your Wort is in depth, and the Product is what your Cooler contains in Ale Gallons.

Example.

You dip with your Rule in the common dipping place, and find there is 16 Inches and 2 tenth parts of an Inch wet, you Multiply your wet Inches by your Area, or your Area by the wet Inches, and the Product is the Number of Gallons, and Parts contain'd in your Cooler.

The Area is 10.07
Wet Inches 16.2

2014
6042
1007

163.134

The number of Gallons in this Cooler is 163, *and the eighth part of a Gallon.*

Of

Of Gauging an Oval Cooler.

You muſt apply your Line or Rule to the Length of the Oval, and ſet down how many Inches and Parts it is, and in like manner to the Breadth, then add them together, and take half the Sum for the Mean Diameter, the which you muſt Multiply or Divide, as in the round Cooler, and the Quotient or Product is the thing required.

By reaſon ſome Men will reckon it too tedious. and others may not rightly apprehend the former Rules, I ſhall ſet down a Table, by which you may by Inſpection (having taken the Dimenſions by the Rule) find the Area, and Content of a Tun or Back.

In the City of *London* the common Brewers Backs are extraordinary large, and it would be too tedious to find how many Gallons a Tun or Cooler holds, the Dimenſions being taken in Inches in length, and breadth, therefore I ſhall here Compoſe a Table by which you may know how many Barrels, Kilderkins, Firkins, Gallons, Pottles, *&c.* a

Back or Tun holds upon one Inch deep, from one Foot, to 10 Foot Square.

	Parts.
A Barrel Contains	100
A Kilderkin contains	50
A Firkin	25
A Gallon	0278
A Pottle	0139
A Quart	0069½
A Pint	0035

A Table shewing the Content of any Square Tun, from one Foot to 20 Foot square in Barrels, and 100 Parts.

Feet of Length and Breadth.	XX	XIX.	XVIII	XVII.	XVI.
	B.prs.	B.prs.	B.prs	B prs.	B.prs.
20	5.67	5.39	5.11	4.82	4.53
		5.12	4.85	4.58	4.31
			4.59	4.34	4.08
	I.			4.09	3.85
1	0.01	II.			3.63
2	0.02	0.05	III.		
3	0.04	0.08	0.12	IV.	
4	0.05	0.11	0.17	0.22	V.
5	0.07	0.14	0.21	0.28	0.35
6	0.08	0.17	0.25	0.34	0.42
7	0.09	0.19	0.29	0.39	0.49
8	0.11	0.22	0.34	0.45	0.56
9	0.12	0.25	0.38	0.51	0 63
10	0.14	0.28	0.42	0.56	0.70
11	0.15	0.31	0.46	0.62	0.78
12	0.17	0.34	0.51	0.68	0.85
13	0.18	0.36	0.55	0.73	0.92
14	0.19	0.39	0.59	0.79	0.99
15	0.21	0.42	0.63	0.85	1.06
16	0.22	0.45	0.68	0 90	1.13
17	0.24	0.48	0.72	0.96	1.20
18	0.25	0.51	0.76	1.02	1.27
19	0.26	0.53	0.80	1.07	1.34
20	0.28	0.56	0.85	1.13	1.14
	I	II.	III.	IV.	V.

A Table shewing the Content of any Square Tun, from one Foot to 20 Foot Square in Barrels, and 100 Parts.

Feet of Length and Breadth:	XV. B.prs.	XIV. B.prs.	X. B.prs.	XII. B.prs.	XI. B.prs.	
	4.25	3.97	5.68	3.40	2 12	20
	4.04	3.77	3.50	3.23	2.96	19
	3.82	3.57	3.31	3.06	2.80	18
	3.61	3.37	3.13	2.89	2.65	17
	3.40	3.17	2.95	2.72	2.49	16
	3.19	2.97	2.76	2.55	2.33	15
		2.78	2.58	2.38	2.18	14
	VI.		2.39	2.21	2.02	13
	0.51	VII.		2.04	1.87	12
	0.59	0.69	VIII.		1.71	11
	0.68	0.79	0.90	IX.		
	0.76	0.89	1.02	1.14	X.	
	0.85	0.99	1.13	1.27	1.41	10
	0.93	1.09	1.24	1.40	1.56	11
	1.02	1.19	1.36	1.53	1.70	12
	1.10	1.29	1.47	1.65	1.84	13
	1.19	1.39	1.58	1.87	1.98	14
	1.27	1.48	1.87	1.91	2.12	15
	1.36	1.58	1.81	2.04	2.26	16
	1.44	1.68	1.92	2.17	2.41	17
	1.53	1.78	2.04	2.29	2.55	18
	1.61	1.88	2.15	2.42	2.69	19
	1.70	1.98	2.26	2.55	2.83	20
	VI.	VII.	VIII.	IX.	X.	

The

The use of the foregoing Table will appear by the following Example.

Q. 1. I would know the *Area*, or what the Tun holds upon an Inch, which is 6 Foot square every way?

Look where you find 6 in the side of the Table, and VI in the Top or Bottom, and where they meet in a Square, you will find 0.51, which shews that a Tun 6 Foot Square holds upon an Inch 0. Barrel .51. parts of a Barrel, which is half a Barrel and a little more, this being Multiply'd by the Inches in Depth, you have the Content in Barrels and Parts.

Q. 2. A Tun is 9 Foot one way, and four the other, what is the Content of one Inch Deep.

Find 9. Foot in the side of the Table, and IIII. in the Bottom, and where they meet in a Square, you will find 0. 51. the same of the other.

CHAP. II.

How Victuallers may know whether they have their right Meaſure of Drink from the Brewer, and whether their Casks be falſe or true?

FOR thoſe who underſtand Figures, I ſhall inſert an Infallible Rule, whereby they ſhall eaſily Diſcover a Fraud, if there be ſuch, and for thoſe who do not underſtand Figuring, (or ſuppoſe they be illiterate) ſhall exactly know what is in their Butts, Hogſheads, Barrels, Kilderkins, or Firkins, and how much is wanting of what they ſhould have, and that in the Plaineſt and eaſieſt Method imaginable.

I ſhall firſt begin with him who underſtands Figures; for tho he has Learned no further than *Multiplication*, he is ſufficiently qualify'd for this.

Suppoſe

Suppoſe he was to Gauge a Barrel of Beer, he is firſt to put his Rule in at the Bong, downright, and obſerve how many Inches and Parts the Inſide of the Bong Cuts on the Rule and Inſert it on Paper, then apply a Line to the Head in manner following, you are to find the Center of the Head by a pair of Compaſſes, then extend your Line from one ſide of the Circle to the other, croſſing the Center, and how many Inches and Parts that is, ſet down likewiſe the Inches muſt be diſtinguiſhed from the Parts by a prick betwixt the number of Inches, and the number of Parts.

When you have done according to the foregoing Directions, you muſt Subduct the Inches and Parts, the Head is in Diameter, from the Bong Diameter, and the remainder you muſt Multiply by .7, and that Product you muſt add to the Head Diameter, placing the Head Diameter one place towards the left hand, further than the Product, as you may ſee in the following Example.

Example

Example.

Suppoſe the Bong Diameter to be 23.1, and the Head Diameter to be 20.5 length 26.

Bong Diameter.	23.1
Head Diameter.	20.5
	2.6
	.7
	1.82
	20.5
The Mean Diameter.	22.32

The foregoing Number 22.32 is the Mean Diameter of the Beer Barrel, which mean Diameter you muſt Multiply by it ſelf, and Divide the Product by 359, or Multiply it by .00278, and the Quotient or Product Multiply by the Length, and the laſt Product is the Content of the Cask.

Example.

Example.

The Mean Diameter is	22.32
	22.32
	4464
	6695
	4464
	4464
	498.1824
	.00278
	39954592
	34872768
	9963648
	1.365047072
In Length	26
	8190282432
	2730094144
	35.491223872

The Content of this Cask is 35 Gallons, and almoſt an half. Always obſerve

obſerve to prick off ſo many Figures to the right Hand in the Product, as there is Figures or decimal Parts prickt off in both Multiplicator and Multiplicand, and thoſe Figures to the left Hand of the prick is the number of Gallons, and the reſt is only ſo many parts of a Gallon, as you may ſee in the Direction to a common Brewer.

This Rule in finding the Content muſt be uſed in Barrels, Kilderkins, Firkins, Hogſheads and Butts; but to eaſe you of all this Trouble of *Multiplication*, I ſhall hereafter inſert a Table which will be very uſeful and eaſy for you.

In the next place I ſhall direct how any Man that underſtands nothing of Figures, ſhall Gauge his own Drink, by the help of nothing but a Rod of Inches and Quarters, and a Cork, ballanced with a piece of Lead at the end of it, ſo much as may ſink it, ſo as the top of the Cork may ſwim equal with the top of the Liquor, trying it in a Pail of Water, then tye a ſtring to it, making a Hook in the middle of the

the top of the Cork to fix it to, and uſe it as hereafter mentioned.

Note, *That in a Barrel of Beer there is 36 Gallons, and in Ale but 32.*

The ſeveral Dimenſions of Casks are as follows.

A Butt ought to be in length 50 Inches, the ledges beyond each Head being one Inch, and one quarter of an Inch, which makes 2 Inches and an half, each Head being 3 quarters of an Inch thick, which amounts to 4 Inches in all, the which muſt be taken from the whole length, and the remainder is 46 Inches in length of Liquor. But you need have no reſpect to the length of the Liquor, but to the length of the Cask, for if the Butt be 50 Inches in length, and 31 Inches at the Bong, and 25 at the Head, the Cask is true.

Note, *That the Dimenſions of the following Casks muſt be taken to the outſide of the Bong, and from the inſide of the under ſtaves, to the outſide of the upper ſtaves at the Head.*

	Inches.
A Barrel muſt be in Length	31
Diameter at the Bong	23 *and an half.*
Diameter at the Head	21

A

	Inches.
A Kilderkin muſt be in leng.	24 *and an half.*
Diameter at the Bong	18 3 *quarters*
Diameter at the Head	16 *and an half*
A Firkin muſt be in length	19
Diameter at Bong	15
Diameter at Head	13

The Rod which you are to uſe in taking theſe Dimenſions muſt be at leaſt four Foot long, divided into Inches and Quarters, with which Rod you are firſt to try the length, and then put your Rod ſtreight down at the Bong, and if 23 and half appear at the outſide of the Bong, the Barrel is right in that part; then apply the Rod to the Head, exactly in the middle, and if the outward Edg of the Stave cut 21 on the Rule, it is a true Barrel: This is only to know whether the Veſſel be right or not: But I ſhall in the following matter direct you an eaſier way.

Now as to the knowing what quantity of Drink you have, or what you want of the quantity you ſhould have, uſe the following Method.

For

For a Barrel of Beer.

Put your Rod exactly down at the Bong, then throw in your Cork, holding the ſtring in your Hand, and it will firſt ſink below the Liquor and Yeaſt, and then it will riſe to the face of the Liquor; then extend your ſtring ſo as you may not pull the top of the Cork above the Liquor, and fix the ſtring with your Thumb to the Rule, taking them both together out of the Barrel, and when you have wiped the Yeaſt off the Rule, what ever Figure appears, where the top of the Cork touches, there is ſo many Inches of Liquor; if the Liquor wet 15 Inches and three Quarters, there is juſt 3 Firkins in the Barrel, and for every quarter of an Inch it is under, you looſe half a Gallon of Drink, for 7 Inches downward.

If the Drink wet 11 Inches and an half, there is half a Barrel, or 18 Gallons in the Barrel, and for every Quarter of an Inch you want in ſo much being wet, the loſs of half a Gallon of Drink.

If

If the Drink wet 9 Inches, and almoſt a quarter, then there is in the Barrel one Firkin or 9 Gallons, and for every half Inch you want of being wet ſo far for 4 Inches downward, your loſs is one Gallon and little more.

For Gauging a Kilderkin of Beer.

If the Liquor wet 18 Inches and an half, it is right, and if it be an Inch under, it wants half a Gallon; if 2 Inches and a quarter, it wants a Gallon.

If the Drink wet 9 Inches and a Quarter, there is in the Kilderkin one Firkin, and for every three quarters of an Inch it is under, it wants one Gallon.

For Gauging a Hogſhead of Beer.

If the Liquor wet 26 Inches on the Rule, then there is 54 Gallons, or a Hogſhead of Drink therein, and if it wet 25 and a quarter, there is but 53 Gallons therein, and for every three Quarters of an Inch it wants of wetting 25 Inches, there is a Gallon loſs for 3 Inches downward.

If

If the Liquor wet 20 Inches and a quarter, then there is 46 Gallons in the Hogſhead; and for every half Inch it wants of wetting ſo far there is 9 Pints wanting, for two Inches downward.

If the Liquor wet 18 Inches on the Rule, then here is 41 Gallons in the Cask, and for every Inch it wants of wetting 18 Inches, there is 2 Gallons, and 3 quarts wanting for 6 Inches downward.

If the Liquor wet 12 Inches on the Rule, then there is 24 Gallons in the Cask, if 10 and a quarter, there is 19, if 9 and an half, there is 17, if 8, there is 13. if 7 and a quarter, there is 11 Gallons in the Cask; if it wet 5, there is 6 Gallons in the Cask, and if it wet one Inch and three quarters, there is but one Gallon in the Cask.

To Gauge a Butt lying.

A Butt muſt be as before ſpecified, that is, the length 50 Inches from the one end of the Staves to the other, the Bong muſt be 31, and the Head muſt be 25, meaſuring

ing the Bong and Head, from the bottom of the Cask, oppoſite to the Bong, to the outſide of the Staves at the Bong and Head, and if the Dimenſions be ſo, the Cask is right.

Put your Rod down ſtreight at the Bong, and if the Liquor wet 31. Inches, there is the true Content in the Cask, that is, 108. Gallons, and if it want twoInches of wetting ſo far;there is 2 Gallons of Drink wanting; and if it want 3 Inches of wetting, ſo far there is wanting of Drink 4 Gallons and an half; if it wet 27 Inches on the Rod, there is juſt 101. Gallons in it; and for every Inch it wants for 2 Inches downward, there's 2 Gallons and an half of Drink wanting, and for every quarter of an Inch thence downward for 6 Inches, there is a Gallon wanting; If there be wet 21 Inches, then there is in the Cask 80. Gallons, and for every Inch not wetting ſo far for 2 Inches, there is 4 Gallons and an half wanting.

If the Liquor wet 19 Inches, then there is in the Cask 71 Gallons, and for every Inch it wants of wetting ſo

far there is 5 Gallons of Drink wanting for 2 Inches downward; if the Liquor wet 16 Inches, there is in the Cask 56 Gallons and an half, and for every Inch it wants, for 3 Inches down ward, there is 5 Gallons wanting. If the Liquor wet 12 Inches, there is 36 Gallons and an half in the Cask, and for every quarter of an inch for 6 inches downward it wants of wetting ſo far, there is 1. Gallon of Drink wanting; if the Liquor wet 6 inches on the Rule, there is 12. Gallons therein of Beer, and if it wet 2 on the rule there is 2 Gallons therein.

To Gauge a Butt ſtanding.

Put your Rod ſtreight down at the Head of the Butt to the bottom of the ſame, and if the Liquor wet 46 inches, there is the true Content of the Butt, or 108. Gallons of Beer therein; if it wet 45 and an half, there wants a Gallon, and ſo for every half inch it wants of wetting 46 inches on the Rule for 8 inches downward, there is a Gallon of Drink wanting; if the Li-

Liquor wet 38 inches on the Rule, there is 92 Gallons in the Butt; if it wet 37 on the Rule, 89 Gallons and an half in the Cask; if 36 on the Rule, 87 Gallons in the Cask; if 35 inches on the Rule, then there is 85 Gallons in the Cask; and for every inch it wants of wetting 35 on the Rule, for 25 inches downward, there wants two Gallons and an half of Drink.

If the Liquor wet 10 Inches on the Rule, there is 21 Gallons in the Cask, and for every inch it wants of wetting ſo far, for two Inches downward, there is 2 Gallons and an half wanting of Liquor, and from thence downward there is for every half inch it wants of wetting 8 inches, one Gallon wanting.

All the foregoing Casks may be Meaſured moſt eaſy and exactly, with a little care and pains in the uſe of the Rule and Cork, that is, in putting the Rule ſtraight down into the Cask, and taking care when your Cork is thrown into the Barrel, that you do not extend the ſtring ſo as to pull the Cork above the Liquor, nor let the ſtring

be too ſlack. The Rules and Corks you may be furniſhed with, at Mr. *Hugh Newman's*, Bookſeller, at the ſign of the *Graſhopper* in the *Poultrey*, next the *Roſe-Tavern*.

Having told you in the foregoing matter how to know whether a Cask holds the true Meaſure it ought to hold, by the Length, Head and Bong; I ſhall now ſhow you an eaſier way, and as ſure as the other.

You muſt put your Rule down at the Bong ſlantways to the undermoſt edg of the Head, and if 34 inches and a quarter appear at the inſide of the middle of the Bong, to the right or left hand that is a true Butt; and if 29 appear at the ſame place in a Hogſhead it is true; and if 25 appear in a Barrel it is true; and if 23 appear in a Kilderkin; and 16 appear in a Firkin, they are true.

The Names and Contents of Beer and Ale Veſſels.

A Beer Barrel holds	36	
An Ale Barrel	32	
A Beer Kilderkin	18	
An Ale Kilderkin	16	
A Beer Firkin	9	*Gallons.*
An Ale Firkin	8	
A Butt of Beer is	108	
An Hogſhead	54	

CHAP. III.

How Vintners, Wine Coopers, Diſtillers, and Strong-water-men, may Gauge any Cask, either full, or part full, and to know how much is in a Cask, or how much is drawn out.

I Shall neither Diſcourſe of the neceſſity nor uſefulneſs of the thing, the Traders themſelves being ſatisfied thereof, but ſhall, as nigh as poſſibly I can, direct how every man may Gauge his own Liquors, either by the Pen and Rule, or by the Rule of inchesalone, the latter being as exact as the former, and a great deal more eaſy.

The Content of ſeveral Wine-Casks uſed in England.

A Tun of Wine is	252	*Gallons.*
A Pipe, or Butt is	126	

A

A Tierce is	42	Gallons.
A Tercion is	84	
An Hogſhead is	63	
A Runlet is	18	

A Canary Pipe is, 116 and almoſt a half
A Brandy Hogſhead is, 57 and 1 third

To begin with him who underſtands Arithmetick, you are to take the ſeveral Dimenſions of your Cask in manner following.

Firſt, Meaſure with your Rule (which muſt be at leaſt 5 Foot long) the length of your Cask, and ſet down with your Pen how many inches and parts, then Meaſure how much the Staves go beyond the Heads, which I believe in a Hogſhead may be one Inch and an half, which being double for both ends, amounts to 3 Inches; then for the thickneſs of each Head you may find by piercing of a hole and putting in a Nail, which muſt be made crooked at the Point; then when you have found the thickneſs of one Head, double it, and add the Sum to the 3 inches the Ledges was beyond the Head, which I ſuppoſe to be in all

4 inches

4 inches and an half; which 4 and an half you must subduct from the whole length, and the remainder is the length of the Liquor, or of the Casks inside from head to head.

Then put the Rule in at the Bong streight down to the bottom, and see how many Inches and Parts appears at the middle of the inside of the Bong, and set that down; in like manner apply your Rule to the Head, and observe how many Inches it is in Diameter from inside to inside, crossing the middle of the Head, and likewise set that down.

When you have taken the Dimensions as before directed, you are to Substract the Head from the Bong, and the Remainder Multiply by .7 adding the Product to the head Diameter, in manner following, that is, place the head Diameter one place towards the Left-hand, further than the Product, then add them together, and prick off all the Figures to the right hand, except two, which two to the left-hand beyond the Prick, is so many Inches, and the rest to the Right is but so many parts of an inch. Then

Then you muſt Multiply this Number by it ſelf, and the Product you muſt Divide by 231, or Multiply by .0043, and the quotient or Product Multiply by the length, and the Product is how many Gallons and Parts is in the Cask if it be full, or how many Gallons of Wine the Cask will hold? obſerving always to prick off as many Figures to the right hand, as there is Figures prickt off to the Right, in both Multiplyer and Multiplicand.

Example.

	Inches	
The Bong Diameter is	26.	0
The Head Diameter is	22.	3 *Parts*
The Remainder is	3.	7
The Multiplyer		7
The Product	2.	59
The Head Diameter is	22.	3
The Mean Diameter	24.	89

2489
24.89

22401
19912
996
4978

619.5121
.0043

18585363
24780484

2,66390203
The Length is 32

532780406
799170609

85.24486496

The Content of the foregoing Cask is juſt 85 Gallons, and almoſt one quarter of a Gallon, the firſt two Figures in the Decimal Parts to the Right Hand being of more value by 10 times than all the reſt; for as I ſaid before, in Brewing, that 25 is the

the one quarter of a Gallon, and .50 the one half, and .75 the three quarters, ſo you ſee here that the Figures to the Right Hand is .24 Decimals, which does not want much of .25, the one quarter of a Gallon.

The foregoing Rule you are to uſe in all Casks, only obſerve that you prick off ſo many Figures as there is in both the Numbers Multiplied, and for a Cask much Boulging Multiply by .75 inſtead of .7, and in caſe it be a Cask which is ſhort and thick, in form of a hard Ware Cask, which is very rare to be found, you are to Multiply by .6 but the foregoing Multiplier .7 will ſerve for moſt Casks, if not all, uſed by Vintners.

If it ſo fall out that you have a Cask part full, and would deſire to know how much is in the Cask, and how much is drawn out, you muſt firſt know what the whole content of the Cask is, by the foregoing Rule, and then work according to the following Rule.

We ſhall ſuppoſe the Cask to be a Hogſherd lying, whoſe Content is 63 Gallons

Gallons of Wine, the Bong Diameter of it is 25 Inches, and there is of Liquor in the Cask 16 Inches; now to know how many Gallons of Wine is therein, you muſt add two Cyphers to the wet Inches, let them be what Number they will, and Divide the ſame by the Bong Diameter, obſerving that if the remainder be above half the Diviſor, to add one more to the Quotient, and look for what Number you have in your Quotient in the following Table, and over-againſt it, and under V. S. you will find a Number, the which being found, Multiply by the Content, and you have exactly how many Gallons and Parts is in the Cask, the firſt two Figures to the left hand being the Gallons, and the reſt you are to prick off for Parts.

Example.

The Content of a Cask is	63
The Bong Diameter is	25
The wet Inches is	16
	25

25)16.00(.64
150
100

The Numb. I find in the Table over against 64
My Quotient, and under V. S. is .6759
Multiply by the Content 63

20277
40554

Remaining Liquor 42.5817

There is in the Cask 42. Gallons and an half of Wine.

This is the most common and easy way I can Prescribe, and will come nigh enough the Truth in Boulging Casks, tho the less they are Boulging, the truer the work will be.

A Table of Segments.

V.S		V.S		V.S		V.S	
1	.0017	99	.9983	26	.2066	74	.7934
2	.0048	98	.9952	27	.2178	73	.7822
3	.0087	97	.9913	28	.2292	72	.7708
4	.0134	96	.9806	29	.2407	71	.7503
5	.0187	95	.9813	30	.2523	70	.7477
6	.0245	94	.9755	31	.2640	69	.7360
7	.0308	93	.9692	32	.2759	68	.7241
8	.0375	92	.9625	33	.287867		.7122
9	.0446	91	.9554	34	.299866		.7002
10	.0520	90	.9480	35	.311965		.6881
11	.0598	89	.9402	36	.324164		.6759
12	.0680	88	.9320	37	.336463		.6636
13	.0764	87	.9236	38	.348762		.6513
14	.0851	86	.9149	39	.361161		.6389
15	.0941	85	.9059	40	.373160		.6265
16	.1033	84	.8967	41	.386059		.6140
17	.1127	83	.8873	42	.398658		.6014
18	.1224	82	.8776	43	.411257		.5888
19	.1323	81	.8677	44	.423856		.5762
20	.1424	80	.8576	45	.436	55	.5636
21	.1527	79	.8473	46	.4491	54	.5509
22	.1631	78	.8369	47	.4618	53	.5382
23	.1737	77	.8263	48	.4745	52	.5255
24	.1845	76	.8155	49	.4873	51	.5127
25	.1955	75	.8045	50	.5000	50	.5000

The foregoing Rules are only fit for ſuch as underſtand Figures, and conſequently altogether uſeleſs to thoſe who do not; but the following Rule ſhall be uſeful to both, and not in the leaſt inferiour to the former in exactneſs, tho a great deal more eaſy, and ſooner done.

You ſhall uſe the ſame Inſtrument for Wine, as you did for Ale, that is, a Rod about 5 Foot long, divided into Inches and Quarters; but will have no occaſion for the Cork, which is directed to be uſed in Ale, by reaſon there is no Yeaſt upon Wines, or Brandies.

To Gauge an Hogſhead of Wine.

Put your Rule ſtreight down at the Bong, and if the Wine wet 25 inches on the Rule, there is 63 Gallons of Wine in the Cask; if 23 and an half, there wants a Gallon; if the Wine wet 22, there wants 3 *Gallons* and an half, if it wet 21 inches on the Rule, there is 58 gallons in the Cask: if 20 inches and an half, there is 57 gallons; if 19 inches and 3 quarters, there is 19 inches

and

and 3 quarters for 3 inches downward, there is 3 gallons wanting of 55 gallons. If the Wine wet 16 Inches and an half, there is 46 gallons in the Cask, and for every Inch it wants of wetting 16 inches, for 8 inches downward, there is 3 gallons and an half wanting of 46 gallons. If the Wine wet 8 inches and an half on the Rule, there is 18 Gallons in the Cask. And for every inch it wants of wetting ſo far for 3 inches downward, there is wanting 3 Gallons of Wine. If the Wine wet 5 inches and an half, there is 9 gallons in the Cask; if 4 and three quarters, there is 7 gallons; if 4 inches there is 5 gallons and an half, and if there be 2 inches wet, there is 2 gallons of Wine in the Cask. So much for a Hogſhead: We ſhall next proceed to a Pipe, theſe two being the moſt common Veſſels uſed by Vintners.

To Gauge a Pipe of Wine.

A *Canary* Pipe contains 116 gallons, tho ſome ſay 120; But I have try'd the Content.

Content of ſome Pipes, and found it to be 116 and almoſt an half; but we ſhall here ſuppoſe it to 120 Gallons, and proceed in the work as follows.

Put your Rule in at the Bong, as aforeſaid, and if the Wine wet 28 inches and three quarters, there is 120 gallons in the Cask; if 27 inches and an half, there is but 119 therein; if 26 inches and three quarters, there is 118 gallons; if 26 inches, there is 116 gallons and an half; if 25 inches wet, there is 114 and an half; if 24 inches wet, there is 112 gallons and an half; if 23 and an half wet, there is 111 gallons; and if 23 wet, there is 109 gallons in the Pipe, and for every inch it wants of wetting ſo far, for 4 inches downward, there is 5 gallons wanting. If the Wine wet 19 inches on the Rule, there is in the Cask 89 gallons, and for every inch is wanting thence downward for 4 inches, there is 6 gallons wanting of 89 gallons; If 15 inches be wet on the Rule, there is 65 gallons in the Cask, and for every inch it wants of wetting 15 on the Rule,

for

for 3 inches downward, there is 6 gallons and an half wanting of 65 gallons. If it wet 12 inches, there is 45 gallons in the Cask; and if it wet 11 inches, there is 39 gallons and an half therein, and from thence downward for 2 inches, there is for each inch 5 gallons and an half wanting of 39 gallons. If the Wine wet 9 inches on the Rule, there is 28 gallons, and for every inch it wants thereof, for 3 inches downward, there is 5 gallons wanting of 28 gallons. If the Wine wet 5 inches on the Rule, there is 9 gallons in the Cask; if it wet 4 inches there is 6 gallons; if it wet 3 inches, there is 4 gallons therein; and if it wet 2 inches, there is 2 gallons in the Pipe.

As to Tierces and Runlets, their Contents are so various, that there can be no certain Rule set down for the Gauging of them; only that if the Head Diameter of a Tierce be 16 inches, and a quarter, and the Bong 18 inches and a quarter, and the length 34 and an half, the Tierce contains 42 Gallons.

If

If the Head Diameter of a Runlet be 15 inches and 3 quarters, and the Bong 17 and a quarter, and length 31, the Content of the Runlet is 29 gallons and an half.

Note, *That Brandys, ſtrongwaters, Cyder, Perry, Metheglin, Mead, &c. are all Meaſured by Wine Meaſure.*

To Gauge a Pipe Standing.

This may be very uſeful for Diſtillers, and particularly for thoſe in the Country, that being the moſt common Veſſels uſed by them.

Suppoſe the Content to be 116 gallons, I ſhall here ſet down a Table, by which you may know how much Liquor is in the Pipe, at every inch in Depth; by putting your Rule ſtreight down to the bottom of the Veſſel, and ſeeing how many inches the Liquor wets on the Rule, and oppoſite to the number of inches in the firſt Collumn, you will find in the ſecond Column the number of Gallons and Parts.

Exampl.

Example.

Suppoſe there be 16 inches wet on the Rule, you look for 16 in the firſt Collumn, and over-againſt it in the ſecond, you will have the Number of Gallons and Parts. *Viz.* 36 Gallons and 3 Pints.

A Table shewing how many Gallons and Pints of Wine or Brandy a Pipe standing holds upon every Inch.

Inc.	Gal.	Pi.	Inc.	Gal.	Pi.
1	2		25	59	4
2	4	1	26	62	
3	6	2	27	65	
4	8	1	28	67	
5	10	3	29	69	3
6	12	1	30	72	2
7	14	4	31	75	
8	17		32	77	5
9	19	3	33	80	
10	21	6	34	82	3
11	24		35	85	
12	26	4	36	87	4
13	29		37	90	4
14	31	3	38	92	6
15	33	5	39	95	
16	36	3	40	97	
17	39		41	99	2
18	41	4	42	102	
19	44		43	104	
20	46	4	44	105	1
21	49	3	55	108	1
22	52		46	110	1
23	53	3	47	112	3
24	57		48	115	

To Gauge a Tun *ſtanding.*

The Content of the Tun of Wine is 252 Gallons, and it is a Veſſel very much uſed in the Diſtillery, both for Spirits and low-Wines; Therefore *I* have ſet down a Table, by which you may know the *Content* of every inch in depth, uſing it in the ſame manner as the foregoing Table for a Pipe.

Some Diſtillers in the City of *London* weigh their Veſſels when full, which *I* look upon, and doubtleſs it is, a great Trouble; it being none of my buſineſs to doubt the exactneſs of it, here *I* ſhall inſert what weight they allow to ſome quantities, and what weight they allow for the Cask.

For half an Hogſhead, which is 31 Gallons and an Half, they allow two Hundred, one Quarter and 11 Pound for Cask and Liquor, allowing one Quarter and 22 Pound for the Cask.

For a Punchion, they allow, Cask and Liquor, 6 hundred, one quarter and 2 pound.

For

For a *Canary* Pipe, 8 hundred, 2 quarters, and 17 pound.

For a Butt or Pipe, holding 126 gallons, they allow for Butt and Liquor 9 hundred, 1 quarter and 17 Pound.

For a Hogſhead they allow 4 hundred, 2 quarters and 22 pound.

This is but a Vulgar and uncertain Eſtimation, for ſome Spirits are lighter than others, for the higher the Spirit, the lighter the Quantity.

The following and foregoing Tables are grounded upon both Reaſon and Art; and if any Artiſt will be at the pains to try each Inch ſeverally, he will find them ſo, and conſequently he muſt own that they are moſt uſeful.

A Table shewing how much Wine or Brandy a Tun holds upon every Inch in depth.

Dep.	Gal.	Pi.	Dep.	Gal.	Pi.
1	4	6	23	131	
2	9	2	24	138	2
3	14	6	25	144	
4	19	6	26	151	
5	24	7	27	156	2
6	30		28	164	
7	35	4	29	169	4
8	41	3	30	175	1
9	46	4	31	181	
10	52	6	32	186	4
11	58		33	193	1
12	64		34	199	2
13	70		35	205	1
14	76		36	210	
15	81	7	37	215	2
16	88		38	221	
17	94		39	226	6
18	100		40	231	4
19	106		41	236	4
20	113		42	242	
21	118	2	43	246	
22	126		44	252	

To Gauge another ſort of a Pipe, which holds 126 Gallons moſt uſed in London.

Dep.	Gal.	Pi.	Dep.	Gal.	P
1	2	1	25	65	2
2	4	2	26	68	
3	6	4	27	70	7
4	8	6	28	73	2
5	11	1	29	76	
6	13	4	30	78	6
7	16		31	82	
8	18	6	32	84	4
9	21		33	87	2
10	23	3	34	89	6
11	26	3	35	92	1
12	28	7	36	95	
13	31	4	37	97	7
14	34		38	100	
15	36	4	39	103	
16	39	1	40	105	7
17	42		41	108	
18	44	7	42	111	
19	47	5	43	113	1
20	50	2	44	115	7
21	53		45	118	
22	56	1	46	120	
23	59		47	122	1
24	61	5	48	1 4	

Theſe Tables are all done by one and the ſame Rule

As for the other Veſſels uſed by *Diſtillers*, they are ſo various that there can be no certain Rule ſet down for the Gauging of them by an *Inſtrument*, the only way being to do it by Figures, as I have taught in the foregoing Diſcourſe.

Having Treated as much as is requiſite of *Gauging*, I ſhall now proceed to the ſeveral Prices of greater and leſſer quantities, from a Quart to a Gallon, and from thence to a Tun; and likewiſe from the Price of a Quart to that of a Tun, both in Ale and Wine Meaſure, which will be of great uſe to all who deal therein.

Alſo I ſhall take notice of ſomething of Weights, whereby, having the Price of one Pound, you may know what the Hundred comes to, and the contrary.

How Vintners, Diſtillers, Strong-watermen and Victuallers, may know how much a Tun, Pipe, Hogſhead, or Barrel, &c. amounts to at the common Rate, and Meaſure they Sell or Buy the ſame, from one Shilling the Quart to Two Shillings and ſix Pence, increaſing by 1 d. a Quart.

Firſt, A Tun of Wine is 252 Gallons, or 1008 Quarts at one Shilling the Quart, amounts to 50 l. 8 s.

s.	d.		l.	s.	d.
1	2	amounts to	58	16	00
1	4	amounts to	67	04	00
1	6	amounts to —	75	12	00
1	8	amounts to	84	00	00
1	10	amounts to —	92	08	00
2	0	amounts to —	100	16	00
2	2	amounts to —	109	4	00
2	4	amounts to —	117	12	00
2	6	amounts to —	126	00	00

Secondly, A Pipe is 126 *Gallons, or* 50 *Quarts, at one Shilling the Quart, amounts to* 25 *l.* 4 *s.*

s. d.	l. s.
At 1 2 amounts to	29 0
At 1 4 amounts to	33
At 1 6 amounts to	37
At 1 8 amounts to	42
At 1 10 amounts to	46
At 2 0 amounts to	50
At 2 2 amounts to	54
At 2 4 amounts to	58
At 2 6 amounts to	63

Thirdly, A Hogshead in 63 *Gallons, or* 2 *Quarts, at one Shilling the Quart, amounts to* 12 *l.* 12 *s.*

s. d.	l.
At 1 2 amounts to	14
At 1 4 amounts to	16
At 1 6 amounts to	18
At 1 8 amounts to	21
At 1 10 amounts to	23
At 2 0 amounts to	25
At 2 2 amounts to	27

s. d.	l.	s.
At 2 4 amounts to	29	08
At 2 6 amounts to	31	10

Fourthly, A Pipe or Butt of Ale or Beer is 108 *Gallons, or* 432 *Quarts, at* 2 *d. a Quart, amounts to* 3 *l.* 12 *s.*

d.	l.	s.
At 4 amounts to	07	04
At 6 amounts to	10	16
At 8 amounts to	14	08
At 10 amounts to	18	00
At 12 amounts to	21	12

Fifthly, A Hogshead is 54 *Gallons, or* 216 *Quarts, at* 2 *d. a Quart, amounts to* 1 *l.* 16 *s.*

d.	l.	s.
At 4 amounts to	03	12
At 6 amounts to	05	08
At 8 amounts to	07	04
At 10 amounts to	09	00
At 12 amounts to	10	16

Sixthly, A Barrel of Beer is 36 Gallons, or 144 quarts, at 2d. a quart, amounts to 1l. 4s.

d.	l.	s.
At 4 amounts to	02	08
At 6 amounts to	03	12
At 8 amounts to	04	16
At 10 amounts to	06	09
At 12 amounts to	07	00

Note, *That a Butt is 3 Barrels of Beer, and a Hogſhead is one Barrel and an half.*

Seventhly, A Barrel of Ale is 32 Gallons, or 128 Quarts, at 2d a Quart, amounts to 1l. 1s. 4d.

d.	l.	s.	d.
At 4 amounts to	02	02	08
At 6 amounts to	03	04	00
At 8 amounts to	04	05	04
At 10 amounts to	05	06	08
At 12 amounts to	06	08	00

It will not be amiſs to hint a little at ſuch Meaſures as Tankards and Pots uſed in Publick Houſes, I have taken the

the pains to Gauge a Pot and Tankard, ſuch as are commonly uſed, and find them to hold, according to the Rules of Gauging, 1.5 which is one Pint, and an half, ſo that I ſuppoſe there may be 6. of theſe in a Gallon, by the aſſiſtance of a careful Tapſter, who always takes care, by the help of a thing commonly call'd Nick and Froth, to allow for Lakage and Workage: But we ſhall only allow here 5. and an half of theſe Pots to a Gallon. Now the Barrel of Beer is 36 Gallons, or 198 Pots, at two Pence a Pot, amounts to 1 l. 13 s. And ſo proportionably for a greater or leſſer quantity; as a Pipe or Hogſhead. A Pipe amounts, at two Pence a Pot, to 4 l. 19 s. And a Hogſhead to 2 l. 9 s. 6 d. So the Victuallers may ſoon compute whether they gain or looſe, if they can but compute how many Barrels they ſell a Week, one Week with another through the year, and what Charges they are at in Houſe-keeping, Servants Wages and Houſe-rent, which may eaſily be done.

Suppoſe the Charge in Houſe-keeping to be 20 Shillings a Week, and Servants Wages 4 Shillings a Week, Houſe-Rent 26 Pound a Year, which is 10 Shillings a Week, all this amounts to one Pound 14 Shillings a Week. We ſhall ſuppoſe you pay to your Brewer for Beer *per* Barrel, 1 l. 2 s. and for Ale 19 s. The profit of a Barrel of Beer is 11 Shillings, and of a Barrel of Ale 10 Shillings; Now you muſt either ſell 2 Barrels of Beer, and as much of Ale *per* Week, or elſe you looſe by your Trade. I ſhall ſay no more of this, but leave every man to his own Humour, and ſhall return to my former buſineſs.

It is uſual for Diſtillers to ſell greater or leſſer quantities for uncertain Prices, according as the Chapman, and they can agree, therefore it will not be unneceſſary to lay down a Method whereby they may know if the Price of the ſmall quantity be agreed on, what the great quantity amounts to, or the Contrary.

Suppoſe

Suppoſe he ſells to his Chapman a quantity of Spirits at 5 Shillings and 5 Pence a Gallon, to be ſure the *Buyer* will be deſirous to know what that comes to a Quart, ſo that he may know how to Sell it again by Retail: Therefore it will be very neceſſary he ſhould confer a little with the following Table, which will be very uſeful in all ſuch caſes.

The Rates of Spirits and Brandies by Quart and Gallon, are as follows.

	l.	*s.*
A Tun of Spirits is 252 *Gallons* at 6d. a Quart, or 2s. a Gallon, amounts to	25	04
At 8d. the quart, or 2s. 8d. the Gallon, amounts to	33	12
At 10d. the quart, or 3s. 4d. the gallon, amounts to	42	00
At 1s. the quart, or 4s. the gallon, amounts to	50	80
At 1s. 2d. the quart, or 4s. 8d. the gallon, is	58	16
At 1s. 4d. the quart, or 5s. 4d. the Gallon, is	67	04

At 1s. 6d. the quart, or 6s. the gallon, is 75 12

A Pipe is 126 Gallons, at 6d. the Quart, or 2s. the Gallon, amounts to 12l. 12s.

	l.	s.
At 8d. the qu. or 2s. 8d. the gall. is	16	16
At 10d. the qu. or 3s. 4d. the gall. is	31	00
At 1s. the quart, amounts to	25	00
At 1s 2d. the quart, amounts to	29	08
At 1s. 4d. the quart, amounts to	33	12
At 1s. 6d. the quart, amounts to	37	16

A Hogshead is 63. Gallons at 6d. the Quart, or 2s. the Gallon, amounts to 6l. 6s.

	l.	s.
At 8d. the quart is	08	08
At 10d. the quart is	10	10
At 1s. the quart is	12	12
At 1s. 2d. the quart is	14	14
At 1s. 4d. the quart is	16	16
At 1s. 6d. the quart is	18	18

A Hogſhead is 31 *Gallans and an half, at* 6*d. the Quart, amounts to* 3*l.* 3*s.*

	l.	*s.*
At 8d. the quart is	04	04
At 10d. the quart is	05	05
At 1s. the quart is	06	06
At 1s. 2d. the quart is	07	07
At 1s. 4d. the quart is	08	08
At 1s. 6d. the quart is	09	09

A Runlet is 18 *Gallons, or* 72 *Quarts, at* 6*d. the Quart, amounts to* 1*l.* 16*s.*

	l.	*s.*
At 8d. the quart is	2	08
At 10d. the quart is	3	00
At 1s. the quart is	3	12
At 1s. 2d. the quart is	4	04
At 1s. 4d. the quart is	4	16
At 1s. 6d. the quart is	5	08

6d. A Gallon is 1d. half penny a quart.
7 a gal. is 1d. three farthings a quart.
8 a gal. is 2d. a quart
9 a gal. is 2d. farthing a quart
10 a gal. is 2d half penny a quart
11 a gal. is 2d. three farthings a quart

d.
12 a gal. is 3d a quart.
13 a gal. is 3d. farthing a quart
14 a gal. is 3d half-penny a quart
15 a gal. is 3d three farthings a quart
16 a gal. is 4d a quart
17 a gal. is 4d. farthing a quart.
18 a gal. is 4d. half penny a quart.
19 a gal. is 4d. three fathings a quart
20 a gal. is 5d. a quart
21 a gal. is 5d. farthing a quart
22 a gal. is 5d. half-penny a quart
23 a gal. is 5d. three farthings
24 a gal. is 6d. a quart.

The foregoing Table is ſo plain that it needs no Explication, however, I ſhall ſhow an example of the uſe of it. Suppoſe, as aforementioned, a gallon of *Brandy* coſt 5 s. and 5 d. what is that a Quart, look for the nigheſt Number under 5 s. and 5 d. in the middle of the Table, which you will find to be 5 s. 4 d. and at the Head of the Line you will find a quart coſt 1s. 4d. ſo you are only to add one farthing to it for the odd penny, which makes it 1s. and 4d. farthing a Quart, having

having the price of a Quart, and would desire the Price of a Gallon, or greater quantity, you are to look for the Price of the Quart in the beginning of the Line, and at the middle and end you will find what the greater quantity cost, let it be Gallons or Casks.

If a Pound weight of any thing, cost any number of Pence and Farthings under a Shilling, and from thence to 3s, what will a Hundred weight amount to at 112 Pound to the Hundred.

A Pound weight of Tobacco cost 1 Farthing, what cost an Hundred Weight to at that rate.

	l.	*s.*	*d.*
Answer	00	02	04
At 2 farthings the Pound	00	04	08
At 3 farthings the Pound	00	07	00
At one penny the Pound	00	09	04
At 2d. the Pound	00	18	08
At 3d. the Pound	01	08	00
At 4d. the Pound	01	17	04
At 5d. the pound	02	06	08
At 6d. the Pound	02	16	00

	l.	s.	d.
At 7d. the Pound	03	05	04
At 8d. the Pound	03	14	08
At 9d. the Pound	04	04	00
At 10d. the Pound	04	13	04
At 11d. the Pound	05	02	08
At 1s. the Pound	05	12	00
At 1s. 6d. the Pound	08	08	00
At 2s. the Pound	11	04	00
At 2s. 6d. the Pound	14	00	00
At 3s. the Pound	19	12	00

The Uſe of the foregoing Table is very eaſy; for ſuppoſe I pay for an Hundred weight of any thing, 1*l.* 12*s.* 8*d.* What is that a Pound? I find that 3d. the Pound is 1*l.* 8*s.*: and 2 farthings a Pound in the beginning of the Table is 4s. and 8d. which being added together amounts to the Sum Propoſed; ſo you find that a Pound of any thing at 1l. 12s. 8d. a Hundred, is 3d. 2 Farthings a Pound.

THE

THE True ART OF Brewing

Beer, Ale and Mum.

THere is many different opinions concerning Brewing, and particularly in the Boyling of the Liquor of worts, but I ſhall not trouble my ſelf here to compoſe the difference of mens opinions therein but ſhall Treat of what natural reaſon and my own experience (by unwearied travel and inſpection

ſpection therein) has taught me, as well in the *Northern-parts* of *England*, as in the *South* and *Weſtern*.

Firſt, You are to make your water Boyl, and immediately abate your fire in ſo much that the water may give over Boyling, letting it ſtand in the Copper, or rather draw it from thence into ſome well ſeaſon'd wooden veſſel for the ſpace of one quarter of an hour, then wet your Malt therewith very ſtiff, pouring it on by degrees; when you find that your Malt is all wet, ſtir it very well, and let it ſtand for half an hour, then pour the remaining part of the Liquor which you intend for the firſt worts, on your Maſh very Gently, and Cover it up for two hours. Then put what quantity of hops you think fit into your receiver and let your worts run to them, letting it ſtand with the hops in it one hour; then ſtrain it into your Cooler, and you have done with your firſt worts; then pour the full quantity of Liquor upon your maſh according as you deſign your Beer or Ale to be in ſtrength, in a manner Boyling, ſtirring it very well, then let it ſtand Covered as before

for

for half an hour, and let it run into your receiver, then put all your worts together into the Copper, adding thereto more hops at pleaſure; according to the Liquor you intend to Brew, whether it be Beer or Ale.

Let it Boyl for two hours Gently, then abate the fire and draw it out into the Coolers, ſtraining the hops there-from thorugh a Basket for that purpoſe, and ſo you have done with preparing the worts which is the firſt and greateſt work.

The quantity of hops you are to uſe for Ale is 3 Pound to 8 Buſhels of Malt; if it be Beer, you put 6 pound to 8 buſh:

Take Care your veſſels be kept very Clean, or elſe they will turn ſower, and will prick the worts, which will cauſe the drink to turn ſower and dead.

To prevent the ſowering of your veſſels you are to waſh them with warm water, mixt with your hops which you ſtrain from the wort.

When your wort is milk warm, put it into your Guile-Tun, and add thereto your yeaſt or Barm; and when it works over Beat it in very Moderately

rately, and often: When it is at the height of working, Tun it into your Casks being well seasoned and Clean, and it will still Continue working and fine it self.

Double Ale or Beer, is Brewed, after the same manner of single, only instead of water, you Mash with the first worts upon fresh Malt.

Thus I have given you my Judgment of Brewing Ale and Beer, and shall only say two or three words to the difference of water.

Some are of opinion that River water makes the best Drink, But to my knowledge there is a place in *Yorkshire* some 9 Miles from *York*, called *Easingwood* and another place called *Byland*, that exceeds all *Yorkshire* for good and strong Ale. And tryal has been made with the same quantity of Malt made of the same Barly at one and the same time, and the same quantity of water; the one being Brewed with River water at *York*, and the other with Spring-water, at *Byland*, the product of worts was the same, and Brewed by the same Brewer, and yet the *Byland* Ale was both

both ſtronger, pleaſanter and Clearer than the other, the Spring proceeds from a Lime ſtone, which water I am confident is better then River water.

CHAP. IV.

A way to clear and fine Beer, and preſerve it from ſowering.

TAke the whites of 10 Eggs and mix with wheat Flower and add thereto, a ſpoonful of the Jelly of Iſinglaſs, and a ſmall quantity of Niter, and it will preſerve, clear and feed the Beer to Admiration.

A way to recover ſower Beer, and reſtore it to its former taſte.

Take three or four handfuls of the Aſhes of Burnt Beech, and as much burnt Oyſter ſhells, and as much Niter as will lye upon a ſhilling, and put all into a Bag and hang it in the Liquor,

quor, then take a good handful of wheat and throw therein, and Bong up the veſſel.

If Beer be not very ſower throw a piece of Chalk well dry'd by the fire in the Lump therein, and it will be drinkable in 3 hours.

How to Bottle Beer and Ale.

Take a handful of Roſemary and Boyl in a quart of fair water skimming it very well, and add thereto half a pound of fine loaf ſugar, and a few Cloves, and when it is milk warm put thereto a ſpoonful of Barm, and when it begins to work skin off the Barm, and put two ſpoonfuls of this to one Bottle, and fill the Bottle almoſt to the neck. Then Cork it very well, your drink muſt neither be ſtail nor new.

How to make Scurvey Graſs Ale after the Beſt and moſt Phyſical manner.

Take *Scurvey-graſs* half a Peck, Water-creaſes four Handfuls, Brook-lime three Handfuls, Horſe-Radiſh three

three Ounces, Sweet Fennel-Seeds and Sena of each two Ounces, Figs four Ounces, bruiſed; and New Ale two Gallons, put them into an Earthen Pot well ſtopt, and let it ſtand for uſe. As you increaſe the Quantity of the Liquor, increaſe likewiſe the Ingredients.

How to Brew as good Mum *as any made in* Brumſwick.

To make a Hogſhead of Mum, you muſt uſe as much Water, as (when Boyled to the Conſumption of one third Part) may make a Hoſhead of Drink, which I believe may be about 100 Gallons: To which you muſt put ſeven Buſhels of Wheat Malt, one Buſhel of Oat Malt, and one Buſhel of ground Beans, being Brewed according to the method of Beer and Ale; you are to Tun it when it is ſufficiently Wrought (but not too long] into your Cask, the ſame being well ſeaſon'd, and not fill'd too full; Put into the Cask when Working, the Tops of Fir and Birch, of each one Pound,

Pound, three handfuls of *Cardus Benedictus* dry'd, Flowers of *Rosa-Solis* a handful, Bettony Marjorum, Penny-royal, Flowers of Elder and Thyme, of each a handful, Seeds of Cardamum and Barberies bruised, of each two Ounces, When the Liquor has wrought a while with the Herbs, fill it up with the remaining Liquor, and then put in the Cask a dozen of New laid Eggs, the Shells not Cracked, then Bong it np Close, and keep it for one, two or three whole years before you use it, for the longer you keep it, the better it is.

CHAP.

CHAP. V.

Of making Cider and other Liquors of fruits, after the beſt and moſt profitable manner.

THe firſt thing to be conſidered here, is the Ripeneſs of the fruit; There being much Cider ſpoil'd in this Kingdom through uſing the fruit before it be ripe, which yields but a Crab'd and ſower Liquor; and will not keep ſo long as if the fruit were ripe before it be uſed.

This is occaſioned by the Ignorance, and Covetouſneſs of Men, who thinking to get all, looſes all; for when Apples falls from the Trees before ripe, by the wind or otherwiſe, he is reſolved he will make uſe of them, merely for the Greater quantity of Liquor they produce, not Conſidering what a ſower, phlegmatick, and unhealthful Liquor proceed there from, & how hurtful it is to the other good and ripe fruit.

There-

Therefore I would adviſe that ſuch fruit as fall before ripe, be laid by till the time of their being ripe if they had been on the Tree; before you grind them, and to keep the product of them by it ſelf.

When the fruit is ripe, which you may know by their fragrant ſmell, or Blackneſs of the ſeed or kernel, lay them in a dry place upon Oat Straw for the ſpace of 15 or 18 days: Pick out all the rotten or Bruiſed Apples from the ſound, for they will give your Cider a bad taſte.

When your fruit is grinded it is proper you let the whole Maſs ſtand a day or two, according to your Conveniency before you preſs it, for it will mightily help the Collour of the Cider.

If you have in the Bottom of your veſſel ſome ſmall holes through which the fine liquor will diſtil into a receiver, it will be much better then that which is preſt.

In preſſing your fruit I leave that to your own diſcreation, and Convenency, the greateſt loſs that can happen thereby is only that ſome ways

preſſ

preſſing produces leſs liquor then others.

Gather all the liquor, as it comes from the preſs into ſome convenient large Veſſel, ſtraining it through a ſtrainer therein, when ſo done throw a Cloath over it and let it ſtand, and ferment.

In order to it's fermentation you are to keep it warm, by warm Cloaths, or otherwiſe, for that will be a great help to the ſpeedy and well fermenting of it; the way of *Fermenting* of it muſt be thus. Take four or five Ounces of *Iſinglaſs*, and beat it very well upon an Anvil, put it into three or four Quarts of warm Cider, let it ſtand in a warm place for three or four days, till it turn to a Jelly, then put a Gallon of Cyder, and mix it with this Jelly very well, and put it altogether into your Veſſel, ſtiring it very well with a Staff, and in a day or two it will be fit for to put into ſuch Veſſels as you deſign to keep it in all the year; taking care before you draw it into theſe Veſſels, to take off a ſort of skim, which will lye on the ſurface of the Liquor.

When the Liquor is thus well Fined and Purified, and put into ſuch Casks as you find convenient; leaving therein no more Lees than is neceſſary for its Preſervation, it will keep a long time: But obſerve that your Casks be well ſeaſon'd.

Take care you do not fill your Casks too full, but leave room for the Cyder to finiſh its Fermentation; but if it will Ferment no more, and you deſign to keep it long, put into a Hogſhead thereof a Quart of unground Wheat, or a ſmall quantity of the New Lees of *Canary*, and then Bung it up, and leave a ſmall Vent-hole, with a looſe Peg therein, for there is a wild Spirit in all ſuch Liquors which will often force a Vent.

To Bottle Cyder.

Great care muſt be had to the well Seaſoning of the Bottles, which I leave to every Mans own Diſcretion. When your *Cyder* is throughly Purify'd, draw it into Bottles, putting into each Bottle about the Bigneſs of a Walnut of fine

fine Sugar; or if the *Cyder* be ſharp or Tart uſe more Sugar; if it has Body enough, and not Flat, the former quantity is enough, then let your Bottles ſtand about an Hour before you Cork them up. Then lay the Bottles on their Sides; open each Bottle once a Day for a Week, and ſtop them cloſe up again, which will let out the wild Spirit, and hinder the breaking of the Bottles; let your Bottles be fill'd within an Inch of the Neck.

You muſt be careful in chuſing good Corks, and let them ſteep three or four Hours in Warm Water before you uſe them.

Perry is made after the ſame manner as *Cyder*, only your *Pears* muſt not be too Mellow when uſed, and if you Grind a few *Crabs* amongſt them, it will make the Drink more Pleaſant.

How to make Gooſeberry Wine.

Take the *Gooſeberries* and preſs the Juice from them, and ſtrain it very well; then take as much Water as the quantity of the Juice is, and Boyl with refined Sugar, about the quantity of one Pound to a Gallon of Wine (when it is mix'd with your Water) then mix the Juice and Water together, and fine it with *Iſinglaſs*, as before directed, after the rate of an Ounce to Ten Gallons, and when the Scum is raiſed to the Top, take it off, and the Liquor will be clear; then draw it into your Veſſels, and it will finiſh its Fermentation, and in a Months time it will be fit for Bottling, put into each Bottle a piece of Sugar.

Currant and *Rasberry Wines* are made after the ſame manner, only the *Currants* when too Ripe are Sower, therefore muſt be pull'd when juſt Ripe; and *Goſeberries* the longer they are on the Tree, the ſweeter they are.

An

An *Appricok* or *Peach* bruiſed and put into a Bottle of any of theſe Wines, will give them a curious Flavour, and brisk Taſt.

How to Fine French *and* Spaniſh *Wines Infallibly.*

Take Half a Pound of *Iſinglaſs*, and put into a Pint of the *Roughest Clarret*, ſo that it may be covered therewith, let them ſtand 24 Hours, then take out the *Iſinglaſs* and beat it to Pieces, then put to it more Wine, ſqueezing it four or five times a day, and as it thickens put to it more wine; then take a Quart of this Gelly, and mix with three Gallons of the ſame *Wine* you are to Fine, and put into the *Hogſhead*, beating it with a Staff very well, and in two days the *Wine* will be Fine. If it be *French Wine* you muſt Bung it up very cloſe, but not the *Spaniſh*.

How to Fine Wines presently.

Put into your Cask some Chips of *Beech*, half a Pint of *Vinegar*, and a Pint of the *Best Spirit of Wine*, and half an handful of *Salt* well dry'd, and in Twelve Hours it will be Fine.

To Fine a sort of Wine call'd Ippocras.

Put therein only *New Milk*, and in a short space it will carry to the bottom, all the gross part of the *Wine*.

To Cure French *Wine that is Ropy or Muddy and Thick.*

Take a Pint of *Spirit of Wine* and put into a Hoshead of *Wine*, provided the *Wine* be not sharp, and it will cure it very speedily, but take care to draw it as soon as you can.

Another Way.

Make a strong *Lee* of the *Ashes* of *Vine Branches* and *Oak-Leaves* and pour a Quart

a Quart thereof into a Pipe of *Wine* hot, and ſtir it well; then infuſe two Pound of *Turnſoll* in good *Sack* Ten Hours, put the Infuſion, being ſtrain'd, into your Wine, and it will make it have a good Flavour, and drink extraordinary well after two days ſetling.

How to cure the Pricking of French *Wine.*

Take one Pound of the Powder of *Holland* or *Flanders Tiles*, and half a Pound of *Roch Allom*, and beat them well, with a ſufficient quantity of the wine, and put into the Hogſhead.

How to Cure the Pricking of Rheniſh.

Firſt Rack your wine into a well ſcented Cask, then mix with two Gallons of *Skim Milk*, ſeven Gallons of *Clarified Honey*, and beat them well, and put into the Cask, and after beating it well in the Cask, let it ſtand to ſettle.

How to Cure the Pricking of Spaniſh Wine.

Put into a Gallon of *Wine* eighteen or twenty fine Lime-ſtones unſlact, ſtiring it very well, and thereto add more wine, and pour this Mixture into the Cask, and ſtir it well, then when it is ſettled, Rack it into a well ſcented Cask.

How to Preſerve Claret.

VVhen the *Claret* is Rack'd from its Lees, put into a *Tierce* of *Wine* ten or twelve *New laid Eggs*, making a ſmall hole in the Shell of each, and the wine will conſume all the Eggs, and keep ſound.

How to Preſerve and Regain the Colour of Claret.

Infuſe *Red Beet Roots* in the ſame *Claret*, and put a ſufficient quantity thereof (being Strain'd) into your wine, according as you would have your wine in Collour. You may infuſe

fuſe with the Roots two or three handfuls of *Ripe Mulberries.*

To prevent the Sowering of French *Wines.*

Take the Powder of the Grains of *Papadiſe* a ſufficient quantity, together with *Lavender Tops* and put into your Veſſel.

To help Sower French Wines.

Take four Ounces of Boyled Wheat, and three or four Canes of *Cinamon*, and put into a Hogſhead, ſtiring it very well, then Bong it up cloſe,

To help Spaniſh Sower Wines.

After it is Rackt into a Clean Cask, put therein two Gallons of *Rain Water*, mixt with five Ounces of Burnt *Chalk*, and two Ounces of *Lime* unſlact, together with two Ounces of *Nutmegs* and *Cloves*.

To help Stinking Wines.

Take half an Ounce of *Ginger*, and three Drahms of *Zedoary*, and Boyl them in a Pottle of good Wine, and put thereto two Ounces of *Nutmegs* and *Cloves*, put it into the Hogſhead very Hot, bong it up cloſe.

To rectify old Decay'd Wines.

Take three Gallons of *Stum* and make it very hot, but not Boyling, and put it ſo into the Hogſhead, ſetting a Pan of Fire nigh the Hogſhead, which will cauſe the Wine to Drink Brisk and Pleaſant.

Another way to Recover Flat Wines.

Draw your Wine upon Freſh Lees, if it be *Spaniſh*, and there needs no more. But if *French*, you muſt Boyl in a Gallon of good Wine eight Ounces of *Raiſins*, and when it is Boyled, put therein a pound of *Fine Sugar* or *Molloſſes*; then put it into the Hogſhead,

head, and Bong it up. If this be put into any Wine, it will make it drink very brisk and ſparkling.

To help Diſturb'd French Wine.

Take two or three Pound of the Powder of *Peeble-ſtones* bak'd in an Oven, and mix therewith thirteen or fourteen Eggs, add thereto a Gallon of the ſame Wine, then put them into the Cask, and ſtir it very well, and in two or three days draw it into a Freſh Cask.

To Cure Spaniſh *and* Rheniſh *of its Fretting.*

You need uſe nothing elſe but open the Bong, and lay thereon a blew Slate, and the Filth which the Wine Purges, muſt be wiped off the Slate three or four times a day, for three days, then let it ſtand quiet for eight or ten days, and then Rack it into a Freſh Cask, being ſcented with hanging a Match rub'd with Brimſtone in at the Bong.

How to Scent a Cask for Wine *or* Cyder.

Take four Ounces of *Brimſtone*, and half as much *Burnt Allom*, three Ounces of *Aqua Vitæ*, melt them in an Earthen Pan over a Fire, then take a Piece of new Linnen Cloath and dip therein, and ſprinkle upon the Powders of *Nutmeg* and *Cloves*, then ſet it on Fire, and let it burn in the Bong-Hole ſo as the fume may diſperſe it ſelf into the Veſſel.

How to make Cowſlip-Wine.

Take three Gallons of fair Water, and five Pound of Loaf-Sugar, and Boil them for half an Hour, and ſcum it well, then let it ſtand till it is almoſt cold; then put in four Quarts of pickt *Cowſlips*, gently bruiſed with two ſpoonfuls of Ale-yeſt, and one Pound of Syrup of *Lymons* beaten with it, and let them ſtand cloſe ſtopped three days in Fermentation; then ſtrain away the Liquor from the Herbs, and put it into a Barrel, give it juſt room

to

to work, and ſo let it remain one Month; then draw it off into Bottles upon a little Loaf-Sugar, Cork it, and tie it down cloſe, and it will keep a Year. The like may be done with *Primroſes*, or any other Flowers.

How to make Scurveygraſs wine.

Take *Scurvey-graſs* in *May*, *June*, or *July*, and ſtamp it in a Stone-Morter, and put it in a large earthen Pan, and ſprinkle it over with a little Powder of *Salt* of *Tartar*, and ſmear it over with *Honey*, and cover it cloſe, and let it ſtand ſo for twenty four Hours, and in the mean time decoct to every Gallon of Water three Pints of Hony, and gently boil it half an hour, ſcum it, and take it from the Fire, and when almoſt cold, put your *Scurvey graſs* into a Barrel, and pour the Liquor on it, and in a gentle warmth let it ſtand in Fermentation, put therein a ſufficient quantity of ſliced Horſe-Radiſh, and ſo let it be fully

Fer

Fermented, take the Juice from the Herbs, and leave them dry, and put the Liquor a ſecond time in freſh Herbs, and Ferment as before, and then refine it with whites of Eggs, and Flower, beat it up together, and when ſufficiently ſtale, then it is the true *Wine of Scurvey-graſs*; but your Fermentation muſt be in a cold place.

To make Meade.

Take Twenty Gallons of the beſt Spring-water can be gotten, and put it over the Fire, and let it ſtand for two or three Hours, but ſuffer it not boil; and to every Gallon of Water add three Pound of *Virgins Honey*, and let it gently boil an hour or more, and take off the Scum in the boiling; and when it is almoſt cold, add two ſpoonfuls of Ale-Yeaſt to every Gallon, and ſo let it work two days; then barrel it up, and add to every Gallon of Liquor *Nutmegs*, *Mace*, *Cinement* in powder, each half an Ounce, tye it up in a Bag, and caſt it into the Liquor, then ſtop it cloſe for a Month, two or three

three, the longer the better; draw it out and bottle it, and a bit of Loaf-Sugar.

Another Highly eſteem'd of.

Take to every Gallon of the cold diſtilled Water of Cowſlips, or Spring Water, two Pound of the beſt *Virgins Honey*, and to every twenty Gallons add in the boiling a good handful of *Marjorem*, *Balm* and *Roſemary* each together, and before it be quite cold ſtrain it through a Seive, and ferment it as before is ſaid; then add in the Barrel *Cinnemen*, *Nutmegs*, *Mace*, *Ginger*, *Orice-Roots* half Ounce, and three or four *Lent-Figs*, and let it work and refine as the former, and bottle in the ſame manner. Obſerve, That *French* ſhews the way of making *Matheglin* ſtale quickly, by covering over with Bread and Muſtard.

To make an Artificial Claret.

Take the *Juice* of *Clary*, or the Water of *Clary* diſtilled in a cold Still, one part *Redſtreak*, or *Pippin-Syder* half a part, and add five or ſix Pound of *Malaga Raiſins*, and beat them in a Stone-Morter, and let it Ferment, cloſe covered over, the ſpace of fifteen days, ſtirring of it every ſecond day, then preſs out the Fruit, and put to the Liquor into a Barrel, with a little *Chriſtals* of *Tarter*, or the fat Mother of *Claret*, and to every three Gallons add a Pint of the Juſtice of *Black Cherries* and *Caſe-berries*, or *Blackberrys*, and cover'd over with Bread and Muſtard, and ſo will it refine and come to be Excellent Wine. Obſerve, with the Mother of a Hogſhead of any Wines, a Hogſhead of Wine may be made not much differing from its Original; now in fortifying your *Artificial Claret*, that if you take a Pint of the Spirit of *Clary*, and the whites of two new laid Eggs, a dram of *Iſing-Glaſs*, and three ſpoonfuls of fine Flower, two Pound of the Syrrup of *Clary*, all being beat together, and refined down, and

and thus does it come wonderful Rich.

To make an Artificial Malaga Wine.

First take a Wine-Barrel hooped and dreſſed, with one end being open, to which a cloſe Cover muſt be fitted, which muſt be to take off and to put on at pleaſure, ſet in a warm place, Winter or Summer, and fill it full with clear and pure Water, to each three Gallons, put ſix pound of the beſt *Malaga Raiſings*, which you muſt bruiſe in a Stone-Morter, and then ſtrow upon the Water upon each twenty Gallons, of which you muſt caſt a handful of *Calx Vive*, then cover the Veſſel cloſe with the Cover, and caſt Clothes upon it to keep it warm, and let it ſtand four or five days to work as Wine or Beer do, when they be new; then ſee if the Raiſins be riſen up to the top of the Water; if ſo, then put them down again, as before; let them thus ſtand three Weeks or a Month together with the Raiſins, being every

every fourth or fifth day put down in caſe they riſe up; then put a Tap into the Veſſel three or four Fingers above the bottom, and try if it be good, and taſte like Wine, if not, let it ſtand a while longer; but if ſo, draw it off into another Wine-Veſſel, and to every twenty Gallons that you have drawn off, put a pint of the beſt *Aqua-vitæ*, two new-laid Eggs, and a quart of *Alligant*, beaten well together, and let it ſtand in a Cellar as other Wine doth, till it be clear and fit to be drank, not only this *Malaga*, but the Author doth alſo ſuppoſe, that thou mayſt by theſe examples, invent and prepare ſeveral other ſorts of Wines, which is not here ſet down, by thy having knowledge of different Herbs, that bears the ſtiptick aſſid or mild Taſte, and have a Signature with the different *Sulphurs* of the different ſorts of Wines; and *Ripadavia*, and *Rialla*, and *Canary*, *Tent*, &c.

How to make Cordial waters after the moſt Phyſical and pleaſant manner.

To make the Peſtilential water.

Take of Rue a handful, and as much Barm, and half a handful of Pimpernel and Draggon, Mugworth, Celendine, Angelica, Agrimony, and Roſemary; Bruiſe them all in a Morter, put them in an earthen pot, put thereto a Gallon of Rheniſh wine, and let them ſtand ſix days, then put the whole Maſs in an Alimbek, draw off the ſpirit, and preſerve for uſe.

The true Receipt to make Dr. Stephens *Water.*

Take of Coriander and Fennelſeeds, Anaſeeds, Galinga and Ginger, of each a dram, Cinnamon, Nutmeg, and Cloves, of each a dram, of Cammomil, Sage and Margorum, five ounces, Fennel, Parſley and ſetwal Roots three ounces, Bruiſe them, and put thereto two quarts of Canary and as much ſtrong Ale, let it ſtand twenty nine hours, and it is fit to put into the ſtill, drawing it off Gently. *How*

How to make Treacle Water.

Take Carduus Benedictus, Marigolds, Baum, of each 4 handfuls, Angelica, and Masterwort, each 3 handfuls, Venice Treacle eight ounces, one Gallon of Canary and three pints of white wine, one quart of Lemon Juice, digest the whole in a close Vessel three days, and distil the same.

How to make Cinnamon Water.

Take half a pound of Cinnamon, well Bruised, Steep it in a quart of Good White wine, and as much Rosewater, and Sack, for the space of fourteen hours, stir it often, the product of this from the still will be three pints.

To make the best sort of Right Irish Usquebaugh.

Take of Good spirits twelve Gallons. Put therein of Annisseeds, Nutmegs, Sugar, Carraway-seeds, of each four ounces, distil the whole to proof spirit,

ſpirit, put thereto Liquoriſh, Raiſins of the Sun two pound, and four pound of Sugar, let it drain through a flannel Bag and fine it down with the whites of Eggs and wheat flower, this is the only way the Natives of *Ireland* make this Liquor, which is approved of to exceed all the other new ways of making it, being but imitations of the original.

Spritus Sambucy.
Or a moſt excellent ſpirit of Elder Berries, of ſoveraign Vertues in many Diſeaſes.

Take ripe Elder Berries, and in a great Preſs, preſs out the Juice as you do Grapes in *England*, and barrel it up, and ferment it very well, according to the higheſt Rules of Fermentation, with addition of a Pint of White-Wine Lees, and after ten or twelve days diſtil it in a Lembick; after fourteen days Rectifie it again. *Obſerve*, that the Wines and Spirits of all Berries, as *Elderberries*, *Rasberries*, *Mulberries*, *Blackberries*, *Cherries*, and the like, ye are not to uſe Water, but preſs out

out their Juices, as before is ſaid, and help on the Fermentation with Sugar, &c. Now any Wine or Spirit that ye deſign to have ſtrong in Taſte and Smell of the Herbs or Flowers, let them but Reiterate the Fermentation and diſtillation, and in each operation, put in freſh Flowers and Herbs in their prime, and then it ſhall be obtained. Here uſe *Elder-Flowers.*

To make Cherry Wine.

Take a Conſiderable quantity of ripe Cherries and take the ſtones out of them, preſs the whole Maſs in a preſs, and ſtrain the Liquor, and let it ſettle for three days, then draw it off from the Sedement and Bottle it up for uſe, puting in each Bottle an ounce of Loaf ſugar, and a little Cinnamon, tye the Cork down, and let it ſtand ſix weeks, and it will be a moſt pleaſant Liquor.

To make VVorm-VVood VVine.

Take a Gallon leſs or more of ſmall white-wine, put therein three or four Lemon peels, of Mace and Cinnamon, half an ounce of each, to each Gallon of Liquor, put a Pound of white Sugar and ſtop them up cloſe in a convenient Veſſel, and when it has ſtood five days, draw it into Bottles, putting into each Bottle a dram of the quinteſcence of worm-wood, Cork the Bottles very well, and let them ſtand 3 or 4 weeks, and they are fit for drinking.

CHAP.

CHAP. V.

Concerning diſtillation of Spirits and Brandys from Malt.

THe Common way uſed by the beſt diſtillers in *Holland*, and other parts, is as follows, *viz.* They firſt make their Liquor or water almoſt Boyl, and Powr it upon the Malt, in a Convenient Veſſel for that uſe, ſo that it may Juſt wet the Malt, when it is wet ſo much as is requiſite, they row or ſtir it very well for the ſpace of an hour, then they cover it up and let it ſtand for two hours; then they let it off into the receivers, and powr on more Liquor, and let it ſtand about an hour, and in like manner a third time; when they have thus done, and conveyed all their worts into the waſh Backs, they ferment it with Barm, for two or three days, keeping it from working over the Backs, by often Beating it in, obſerving to take off the Barm before it work

rk it ſelf flat, or elſe the yeaſt will
to the Bottom and damnify the
ſh, Let it ſtand for uſe in the Back
it be a medium between ſower and
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They draw it out of their Backs in-
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work it ſelf flat, or elſe the yeaſt will fall to the Bottom and damnify the waſh, Let it ſtand for uſe in the Back till it be a medium between ſower and ſweet.

They draw it out of their Backs into the ſtill by a Pump, filling the ſtill above half full, obſerving to keep working of the Back all the while, ſo that it may be equally mixt; when ſo done they ſhut the ſtill; and by a good fire, ſet it a Boyling; they then Lute the ſtill, with whites of Eggs and Barly Flower: If the Malt be good the firſt two or three Cans will be proof Spirits, which needs no more diſtillation. Then they proceed (the low-Wines being all drawn, and has ſtood eight or nine days) to diſtillation of ſpirits, which they do in the ſame manner as they do for the Low-Wines, and if they intend to have it double Rectify'd they draw it a third time.

The Common quantity drawn from a quarter of good Malt, is three Barrels of waſh; and from thence your product of Low wines will be

thirty ſix or thirty eight Gallons which will yeild ſome fourteen Gallons of proof ſpirits.

To prepare a Liquor of Molaſſes from whence you may draw a Good ſpirit.

Make your Liquor, or water Blood warm, and put to forty Gallons of the ſaid Liquor, a hundred weight of Molaſſes, ſtir them well together for the ſpace of two or three hours till the whole is diſſolved, then put it into your Copper putting therein a ſufficient quantity of Balm, Nutmegs and Cinnamon, according to the diſcretion of the diſtiller, the intent of the things being only for a flavor: when you have ſo done Clap on the Head while the Liquor is yet warm, and let it ſtand twenty four hours well Luted, then let it run into the receiver, and put your Barm therein, and let it work very well, beating it in Four or five times a day, for two days, then let it ſtand four or five days and it is an Excellent Liquor for drinking, or diſtillation.

Some

Some excellent Receipts ſent me from a very good hand, for the making of ſome Phyſical and other Ales,

And firſt to make Cock-Ale.

Take a young Cock, and Boyl with four pound of ſton'd Raiſons of the Sun in fair water, put thereto three or four Nutmegs ſlic'd, together with an ounce of Mace and half a pound of dates, beat them well, and put them into three quarts of Canary, and put thereto the Liquor wherein the Cock was Boyled in a manner to pieces, ſtrain the Liquor, and preſs the remainder, and when your Ale has done working pour it in and ſtop it Cloſe, three quarts will be ſufficient for a Barrel of Ale, let it ſtand twenty four hours and Bottle it up and in three weeks it will be fit for drinking.

To make Broom-Ale.

Take three handfuls of the tops of Broom, (Green Broom is the beſt) and Boyl it five hours in two quarts of good Ale, adding thereto (after one hours Boyling,) a quart of Reniſh wine, and three ounces of Elacampane Root: when it has Boyled ſo long take it off the fire, and ſtrain it through a Linnen Cloath, and put the Liquor into an Earthen veſſel, and put therein two ounces of Horſe Radiſh ſliced, Agrimony, and Polipody of each three ounces, let it ſtand three weeks and pour it into three Gallons of Ale, and it will be an excellent drink againſt the Dropſy.

To make an excellent drink againſt the Scurvy.

Take three pecks of ſea Scurvy Graſs, or Garden Scurvy Graſs if the other cannot be got, one peck of water Creſſes and Brook lime, twelve ounces of Engliſh Rhubarb, Horſe-Radiſh

eigh

ight ounces, Anni-ſeeds and Cara-way-ſeeds of each three ounces, Sena and Polipody of the oak ſix ounces, and put it into new Ale, and let it ſtand four or five days before you drink it, and it is an excellent drink ſpring and fall to preſerve the health and purge the Blood.

A Purging Ale by Dr. Butler, *Phyſician to King* James.

Take Sea and Garden Scurvy-Graſs, of each a peck, Sena and Polipody of the oak, of each four ounces, Sarſapa-rilla ſix ounces, Caraway-ſeed and Anni-ſeeds, of each half an ounce, Liquoras two ounces, Agrimony and Maiden-hair, of each two indifferent handfuls, cut the Sarſaparilla, ſcrape and ſlice the Liquoras, then let them be altogether groſly beaten, then put a Gad of Steel into the bottom of a Can-vas Bag to make it ſink, and upon that all the former ingredients, and hang it in a Veſſel of a fit ſize, and Tun upon it four Gallons of good Ale, after four or five days you may drink of it,

and when it begins to grow ſtale draw it into Bottles and Cork it cloſe, and ſet it in a cool Cellar upon the ſtones, or in ſand, If you would have it more purging, increaſe, or double the proportion of Sena.

How to make Coffee, Tea, Chocolate, *and* Content.

To make Coffee.

YOU muſt take a ſufficient quantity of Fair Water, and Boil it over a gentle Fire, but rather ſet it before the Fire in a convenient Tin Pot for that purpoſe, till it Boil; and when it begins to Boil, put to every Pint and half of Water, two Ounces of the beſt Coffee-powder, and let it Boil for a quarter of an Hour, and

it

it is fit for uſe; after it has ſtood for a ſmall time to ſettle. If you would make Milk Coffee, you muſt, to every Pint of Water, put a quart of Milk.

How to make Tea.

To every Quart of Hot Water, put an Ounce of Good Tea, and ſet it over a gentle Fire till it Boyl; when it has boyled for half an Hour, take it off the Fire, and ſet it before the Fire, to keep hot; and as you ſerve it in diſhes, put therein as much Fine Sugar as will ſweeten it, or rather Sugar-Candy. Some are of Opinion that boyling it in Milk, is better than Water, putting thereto a ſmall quantity of Salt.

To make Sage Tea.

You muſt take an ounce of Sage, and put into a Quart of Hot Water, and ſet it over the Fire, as before directed; when it has boyled half an Hour, take it off, and keep it Warm; if you put into the water, when it is a boyling, a ſprig of Roſe-mary, and

a Blade or two of Mace, it will give it a fine Taſte, and will make it comfortable to both Head and Stomach; ſome uſe two parts Sage, and one third Mint.

To Make Chocolate.

Take of Milk one Pint, and of Water half as much, and boil it a while over a gentle Fire; then grate the quantity of one Ounce of the beſt *Chocolate*, and put therein; then take a ſmall quantity of the Liquor out, and beat with ſix Eggs; and when it is well beat, pour it into the whole quantity of Liquor, and let it boil half an Hour gently, ſtiring it often with your Mollinet; then take it off the Fire, and ſet it by the Fire to keep hot; and when you ſerve it up, ſtir it well with your Mollinet; If you Toaſt a thin ſlice of white Bread, and put therein, it will eat extraordinary well.

It will not be amiſs to inſert the manner of making the *Chocolate Cakes*, or *Rowles*, to the end, that thoſe who uſe

uſe it may the better Judg of the good-neſs thereof.

To make Chocolate Cakes and Roules.

Take Cocoa Nutts, and dry them gently in an Iron pan, or pot, and peel off the husks, then powder them very ſmall, ſo that they may be ſifted through a fine ſearce; then to every pound of the ſaid powder add ſeven ounces of fine white ſugar, half an ounce of Nutmegs, one Ounce of Cinamon, Ambergreece and Musk each four Grains, but theſe two may be omitted, unleſs it be for extraordinary uſe.

To make a ſort of Coffee-Houſe Liquor call'd Content.

Take one pint of milk, and half a pint of water, and boyl them together gently, then grate an ounce of the Roule ſo called, therein, and ſet it upon the fire, then take a ſmall quantity of the Liquor out and beat with three or four Eggs, and put into the whole quantity, when it has boyl-

ed half an hour take it off the fire and keep it warm for uſe, when you ſerve it into diſhes put into each diſh a ſmall quantity of *Roſa Solis* : Obſerve you ſtir it with your Mollinet as you do Chocolate.

To make a ſort of Liquor, which is not in the leaſt inferiour to Chocolate.

Take a ſufficient quantity of the kernels of new Walnuts, and take the ſmall rine or skin from them, put them into a pan and dry them ſo as they may be beaten to a fine powder, then ſearce the powder through a fine ſearce, beating the Groſs till it become ſo fine as it may paſs the ſearce ; to every pound of the ſame powder, add ſix ounces of fine ſugar, one ounce of Nutmegs, half a dram of Saffron, all beat to powder. Then take a pint of milk, and half a pint of water, and boyle for a ſmall time over a gentle fire, and put thereto one ounce and a half of the powder ; then take a ſmall quantity of the Liquor out and beat with a dozen of Eggs, adding thereto

three or four ſpoonfuls of Cream, and put all together, and let it boyle for half an hour gently, then take it off and keep it hot for uſe; obſerving to uſe the Mollinet, as you did in Chocolate: I have known Hazle Nuts uſed inſtead of wallnuts.

Here follows a Table uſeful for all Circular veſſels, whereby having found the mean diameter of the veſſel you may know the Content of the ſame from 12. to 60. Inches in diamiter and from 1. to 8. Inches in depth.

A

TABLE

OF THE

Content of Cylinders in Ale-Gallons, and hundreth parts, from twelve to ſixty Inches of Diameter, and to eight Inches in depth.

Content of Cylinders

Diam.	DEPTH. 1.	2.	3.	4.
12	0.40	0.90	1.20	1.60
13	0.47	0.94	1.41	1.88
14	0.55	1.10	1.65	2.20
15	0.63	1.26	1.89	2.52
16	0.71	1.42	2.13	2.84
17	0.80	1.60	2.40	3.20
18	0.90	1.80	2.70.	3.60
19	1.00	2.00	3.00	4.00
20	1.11	2.22	3.33	4.44
21	1.23	2.46	3.69	4.92
22	1.35	2.70	4.05	5.40
23	1.47	2.94	4.41	5.88
24	1.60	3.20	4.80	6.40
25	1.74	3.48	5.22	6.96
26	1.88	3.76	5.64	7.72
27	2.03	4.06	6.09	8.12
28	2.18	4.36	6.54	8.72
29	2.34	4.68	7.02	9.36
30	2.51	5.02	7.53	10.04
31	2.68	5.36	8.04	10.72

in Gallons and hundred Parts.

DEPTH.

5.	6.	7.	8.
2.00	2.40	2.80	3.20
2.35	2.62	3.29	3.76
2.75	3.30	3.85	4.40
3.15	3.78	4.41	5.04
3.55	4.26	4.97	5.68
4.00	4.80	5.60	6.40
4.50	5.40	6.30	7.20
5.00	6.00	7.00	8.00
5.55	6.66	7.77	8.88
6.15	7.38	8.88	9.84
6.75	8.10	9.45	10.80
7.35	8.82	10.29	11.76
8.00	9.60	11.20	12.80
8.70	10.44	12.18	13.92
9.40	11.28	13.16	15.04
10.15	12.18	14.21	16.24
10.90	13.08	15.26	17.44
11.70	14.04	16.38	18.72
12.55	15.06	17.57	20.08
13.40	16.08	18.75	21.44

Content of Cylinders

Diam.	DEPTH. 1.	2.	3.	4.
32	2.85	5.70	8.55	11.40
33	3.03	6.06	9.09	12.12
34	3.22	6.44	9.66	12.88
35	3.11	6.82	10.23	13.64
36	3.61	7.22	10.83	14.64
37	3.81	7.62	11.43	15.24
38	4.02	8.04	12.06	16.08
39	4.24	8.48	12.72	16.96
40	4.46	8.92	13.38	17.84
41	4.68	9.36	14.04	18.72
42	4.91	9.82	14.73	19.64
43	5.15	10.30	15.45	20.60
44	5.39	10.78	16.17	21.56
45	5.64	11.28	16.92	22.56
46	5.89	11.78	17.67	23.56
47	6.15	12.30	18.45	24.60
48	6.42	12.84	19.26	25.68
49	6.69	13.38	20.07	26.76
50	6.96	13.92	20.88	27.84
51	7.42	14.48	21.72	28.96

in gallons an hundred Parts.

DEPTH.

5.	6.	7.	8.
14.25	17.10	19.95	22.80
15.15	18.18	21.21	24.24
16.10	19.32	22.54	25.76
17.05	20.46	23.87	27.28
18.05	21.66	25.27	28.88
19.05	22.86	26.67	30.48
20.10	24.12	28.14	32.16
21.20	25.44	29.68	33.92
22.30	26.76	31.22	35.68
23.40	28.08	32.76	37.44
24.55	26.46	34.37	39.28
25.75	30.60	36.05	41.20
26.95	32.34	37.73	43.12
28.20	33.84	39.48	45.12
29.45	35.34	41.23	47.15
30.75	36.90	43.05	49.20
32.10	38.52	44.94	51.36
33.45	40.14	46.83	53.52
34.80	41.76	48.72	55.68
36.20	43.44	50.68	51.92

Content of Cylinders.

DEPTH.

Diam.	1.	2.	3.	4.
52	7.53	15.06	22.39	30.12
53	7.82	15.64	23.46	31.28
54	8.12	16.24	23.36	32.48
55	8.43	16.84	25.26	33.68
56	8.73	17.46	29.19	84.92
57	9.05	18.10	27.15	36.20
58	9.37	18.74	28.11	37.48
59	9.69	19.38	29.07	38.76
60	10.03	21.60	30.09	46.12

in gallons and hundred Parts.

DEPTH.

5.	6.	7.	8.
37.65	45.18	52.71	60.24
39.10	46.92	54.74	62.56
40.60	48.72	56.84	64.96
42.10	50.52	58.94	67.36
43.65	52.38	61.11	69.84
45.25	54.30	63.35	72.40
46.84	56.22	65.59	74.96
48.45	58.14	67.83	77.52
50.15	60.18	70.31	80.24

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